This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims

1.–125. (Cancelled)

126. (Previously presented) A semiconductor structure comprising:

a layer structure comprising a uniform etch-stop layer having a doping level below 10^{18} atoms/cm^3 and a substantially relaxed layer,

wherein the relaxed layer is graded.

127. (Previously presented) The semiconductor structure of claim 126, wherein the relaxed layer comprises $Si_{1-x}Ge_x$.

128. (Currently amended) A[[The]] semiconductor structure ~~of claim 127~~ comprising:

a layer structure comprising a uniform etch-stop layer having a doping level below 10^{18} atoms/cm^3 and a substantially relaxed layer comprising $Si_{1-x}Ge_x$,

wherein the relaxed layer is graded and $x<0.2$.

129. (Previously presented) The semiconductor structure of claim 128, wherein the uniform etch-stop layer comprises substantially relaxed $Si_{1-y}Ge_y$ and $y>0.19$.

130.–132. (Cancelled)

133. (Previously presented) A semiconductor structure comprising:

a layer structure including a uniform etch-stop layer having a doping level below 10^{18} atoms/cm^3,

wherein the layer structure comprises a substantially relaxed layer disposed under the uniform etch-stop layer and a first strained layer disposed over the uniform etch-stop layer.

134. (Previously presented) The semiconductor structure of claim 133, wherein the first strained layer comprises $Si_{1-z}Ge_z$ and $0\leq z<1$.

135.–139. (Cancelled)

140. (Previously presented) A semiconductor structure, comprising

a layer structure including a strained $Si_{1-z}Ge_z$ layer, and

a handle wafer comprising an insulator, the layer structure being bonded to the handle wafer,

wherein $0 \leq z < 1$, the layer structure includes a substantially relaxed uniform etch-stop layer disposed over a substantially relaxed layer comprising graded $Si_{1-x}Ge_x$, the strained $Si_{1-z}Ge_z$ layer is disposed over the uniform etch-stop layer, and the uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

141. (Previously presented) A semiconductor structure comprising:

a layer structure including a strained $Si_{1-z}Ge_z$ layer;

a handle wafer comprising an insulator, the layer structure being bonded to the handle wafer; and

an insulator layer disposed over the layer structure,

wherein $0 \leq z < 1$, the layer structure includes a substantially relaxed uniform etch-stop layer disposed over a substantially relaxed layer, the strained $Si_{1-z}Ge_z$ layer is disposed over the uniform etch-stop layer, and the uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

142. (Previously presented) A semiconductor structure comprising:

a layer structure including a strained $Si_{1-z}Ge_z$ layer; and

a handle wafer comprising an insulator, the layer structure being bonded to the handle wafer,

wherein $0 \leq z < 1$, the layer structure comprises a substantially relaxed uniform etch-stop layer and substantially relaxed graded layer disposed over the substantially relaxed layer, the strained $Si_{1-z}Ge_z$ layer is disposed over the uniform etch-stop layer, and the uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

143. (Previously presented) The semiconductor structure of claim 142, wherein the substantially relaxed graded layer comprises $Si_{1-x}Ge_x$.

144.–158. (Cancelled)

159. (Previously presented) A semiconductor structure comprising:

a first uniform etch-stop layer;

a second etch-stop layer disposed over the uniform etch-stop layer;

a substantially relaxed layer disposed over the second etch-stop layer;

a substrate disposed over the relaxed layer; and

an insulator layer disposed over the substantially relaxed layer, between the relaxed layer and the substrate,

wherein the first uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

160. (Previously presented) A semiconductor structure comprising:

a first uniform etch-stop layer;

a second etch-stop layer disposed over the uniform etch-stop layer;

a substantially relaxed layer disposed over the second etch-stop layer; and

a substantially relaxed graded layer,

wherein the first uniform etch-stop layer is disposed over the graded layer and the first uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

161. (Previously presented) The semiconductor structure of claim 160, wherein the substantially relaxed graded layer comprises $Si_{1-x}Ge_x$.

162. (Previously presented) The semiconductor structure of claim 160, further comprising:

a first substrate,

wherein the substantially relaxed graded layer is disposed on the first substrate.

163. (Previously presented) A method for forming a semiconductor structure, the method comprising:

forming a uniform etch-stop layer;

providing a handle wafer; and

bonding the uniform etch-stop layer directly to the handle wafer,

wherein said uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

164. (Previously presented) The method of claim 163, wherein the uniform etch-stop layer comprises substantially relaxed $Si_{1-y}Ge_y$.

165. (Previously presented) The method of claim 163, further comprising:

planarizing a surface of the uniform etch-stop layer prior to bonding.

166. (Previously presented) A method for forming a semiconductor structure, the method comprising:

forming a uniform etch-stop layer;

providing a handle wafer;

bonding the uniform etch-stop layer to the handle wafer; and

forming a substantially relaxed graded layer before forming the uniform etch-stop layer,

wherein the uniform etch-stop layer is formed over the substantially relaxed graded layer and said uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

167. (Previously presented) The method of claim 166, wherein the relaxed graded layer comprises $Si_{1-x}Ge_x$.

168. (Previously presented) The method of claim 166, further comprising:

releasing the etch-stop layer by removing at least a portion of the graded layer.

169. (Previously presented) The method of claim 166, wherein releasing the etch-stop layer comprises a wet etch.

170. (Previously presented) The method of claim 166, further comprising:

providing a semiconductor substrate,

wherein the substantially relaxed graded layer is formed over the semiconductor substrate.

171.–176. (Cancelled)

177. (Previously presented) A method for forming a semiconductor substrate, the method comprising:

providing a first substrate;

forming a layer structure over the first substrate by:

forming a uniform etch-stop layer over the first substrate; and

forming a strained layer over the uniform etch-stop layer; and

releasing the strained layer by removing at least a portion of the uniform etch-stop layer,

wherein the uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

178. (Previously presented) The method of claim 177, wherein releasing the strained layer comprises a wet etch.

179. (Previously presented) A method for forming a semiconductor structure, the method comprising:

providing a first substrate; and

forming a layer structure over the first substrate by:

forming a substantially relaxed graded layer over the first substrate, and

forming a uniform etch-stop layer over the graded layer, the uniform etch-stop layer having a doping level below 10^{18} atoms/cm^3.

180. (Previously presented) The method of claim 179, wherein the graded layer comprises $Si_{1-x}Ge_x$.

181. (Previously presented) A method comprising:

providing a first substrate;

forming a layer structure over the first substrate by:

forming a substantially relaxed graded layer over the first substrate;

forming a uniform etch-stop layer over the graded layer;

forming a strained layer over the uniform etch-stop layer; and

releasing the strained layer by removing at least a portion of the graded layer and at least a portion of the uniform etch-stop layer,

wherein the uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

182. (Previously presented) The method of claim 181, wherein releasing the strained layer comprises a wet etch.

183.–187. (Cancelled)

188. (Previously presented) A method for forming a semiconductor structure, the method comprising:

forming a layer structure by:

forming a uniform etch-stop layer; and

forming a strained $Si_{1-z}Ge_z$ layer over the uniform etch-stop layer, and

bonding the layer structure to a handle wafer comprising an insulator; and

releasing the strained layer by removing at least a portion of the uniform etch-stop layer,

wherein $0 \leq z < 1$ and the uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

189. (Previously presented) The method of claim 188, wherein releasing the strained layer comprises a wet etch.

190. (Previously presented) A method for forming a semiconductor structure, the method comprising:

forming a layer structure by:

forming a substantially relaxed graded layer;

forming a uniform etch-stop layer over the substantially graded layer; and

forming a strained $Si_{1-z}Ge_z$ layer over the uniform etch-stop layer, and

bonding the layer structure to a handle wafer comprising an insulator,

wherein $0 \leq z < 1$ and the uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

191. (Previously presented) The method of claim 190, wherein the relaxed graded layer comprises $Si_{1-x}Ge_x$.

192. (Previously presented) The method of claim 190, further comprising:

releasing the strained layer by removing at least a portion of the graded layer and at least a portion of the uniform etch-stop layer.

193. (Previously presented) The method of claim 192, wherein releasing the strained layer comprises a wet etch.

194. (Previously presented) The method of claim 190, further comprising:

forming an insulator layer over the layer structure.

195. (Previously presented) The method of claim 190, further comprising:

providing a substrate,

wherein the layer structure is formed over the substrate.

196. (Previously presented) The method of claim 195, further comprising:

releasing the strained layer by removing at least a portion of the substrate, at least a portion of the graded layer, and at least a portion of the uniform etch-stop layer.

197. (Previously presented) The method of claim 196, wherein releasing the strained layer comprises a wet etch.

198.–199. (Cancelled)

200. (Currently amended) A method for forming a semiconductor structure, the method comprising:

forming a strained etch-stop layer; and

forming a substantially relaxed $Si_{1-w}Ge_w$ layer directly over and in contact with the etch-stop layer,

wherein $w>0$, the etch-stop layer comprises $Si_{1-z}Ge_z$, and $z=0$.

201.–203. (Cancelled)

204. (Previously presented) A method for forming a semiconductor structure, the method comprising:

forming a first uniform etch-stop layer;

forming a second etch-stop layer over the uniform etch-stop layer; and

forming a substantially relaxed layer over the second etch-stop layer,

wherein the first uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3, the second etch-stop layer comprises strained $Si_{1-z}Ge_z$, and $z=0$.

205.–207. (Cancelled)

208. (Previously presented) A method for forming a semiconductor structure, the method comprising:

forming a first uniform etch-stop layer;

forming a second etch-stop layer over the uniform etch-stop layer;

forming a substantially relaxed layer over the second etch-stop layer;

bonding the substantially relaxed layer to a substrate comprising an insulator; and

releasing the second etch-stop layer by removing at least a portion of the first etch-stop layer,

wherein the first uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

209. (Previously presented) The method of claim 208, wherein releasing the second etch-stop layer comprises a wet etch.

210. (Previously presented) The method of claim 208, further comprising:

releasing the substantially relaxed layer by removing at least a portion of the second etch-stop layer.

211. (Previously presented) The method of claim 208, wherein releasing the substantially relaxed layer comprises a wet etch.

212. (Previously presented) A method for forming a semiconductor structure, the method comprising:

forming a first uniform etch-stop layer;

forming a second etch-stop layer over the uniform etch-stop layer; and

forming a substantially relaxed layer over the second etch-stop layer,

forming a substantially relaxed graded layer,

wherein the first uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3, and the first uniform etch-stop layer is formed on the graded layer.

213. (Previously presented) The method of claim 212, wherein the substantially relaxed graded layer comprises $Si_{1-x}Ge_x$.

214. (Previously presented) The method of claim 212, further comprising:

bonding the substantially relaxed layer to a substrate comprising an insulator.

215. (Previously presented) The method of claim 212, further comprising:

releasing the first etch-stop layer by removing at least a portion of the relaxed graded layer.

216. (Previously presented) The method of claim 215,

wherein releasing the first etch-stop layer comprises a wet etch.

217. (Previously presented) The method of claim 215, further comprising:

releasing the second etch-stop layer by removing at least a portion of the first etch-stop layer.

218. (Previously presented) The method of claim 215, wherein releasing the second etch-stop layer comprises a wet etch.

219. (Previously presented) The method of claim 217, further comprising:

releasing the relaxed layer by removing at least a portion of the second etch-stop layer.

220. (Previously presented) The method of claim 219, wherein releasing the relaxed layer comprises a wet etch.

221. (Previously presented) A method for forming a semiconductor structure, the method comprising:

providing a first substrate; and

forming a layer structure over the first substrate by:

forming a substantially relaxed graded layer over the first substrate,

forming a first uniform etch-stop layer over the graded layer,

forming a second etch-stop layer over the uniform etch-stop layer, and

forming a substantially relaxed layer over the second etch-stop layer,

wherein the first uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3, and the layer structure comprises the substantially relaxed graded layer, the first uniform etch-stop layer, the second etch-stop layer, and the substantially relaxed layer.

222. (Previously presented) The method of claim 221, wherein the substantially relaxed graded layer comprises $Si_{1-x}Ge_x$.

223. (Previously presented) The method of claim 221, wherein the first uniform etch-stop layer comprises substantially relaxed $Si_{1-y}Ge_y$, the second etch-stop layer comprises strained $Si_{1-z}Ge_z$, $0 \leq z < 1$, and the substantially relaxed layer comprises $Si_{1-w}Ge_w$.

224. (Previously presented) The method of claim 221, further comprising:

bonding the layer structure to a second substrate including an insulator.

225. (Previously presented) The method of claim 224, wherein the second substrate comprises a material selected from the group consisting of silicon, glass, quartz, and silicon dioxide.

226. (Previously presented) The method of claim 221, the method further comprising:

releasing the first etch-stop layer by removing at least a portion of the first substrate and at least a portion of the graded layer; and

releasing the second etch-stop layer by removing at least a portion of the first etch-stop layer.

227. (Previously presented) The method of claim 226, further comprising:

bonding the layer structure to a second substrate prior to releasing the first etch-stop layer.

228. (Previously presented) The method of claim 226, further comprising:

releasing at least a portion of the relaxed layer by removing at least a portion of the second etch-stop layer.

229. (Previously presented) A method for forming a semiconductor structure, the method comprising:

providing a first substrate;

forming a layer structure on the first substrate by:

forming a substantially relaxed graded layer on the first substrate; and

forming a uniform etch-stop layer on the graded layer; and

releasing the etch-stop layer by removing at least a portion of the substrate and at least a portion of the graded layer,

wherein the uniform etch-stop layer of $Si_{1-y}Ge_y$ has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

230. (Previously presented) The method of claim 229, wherein the substantially relaxed graded layer comprises $Si_{1-x}Ge_x$.

231. (Previously presented) The method of claim 229, wherein the uniform etch-stop layer comprises substantially relaxed $Si_{1-y}Ge_y$.

232. (Previously presented) The method of claim 229, further comprising:

bonding the layer structure to a second substrate prior to releasing the etch-stop layer.

233. (Cancelled)

234. (Previously presented) A semiconductor structure comprising:

a layer structure including a uniform etch-stop layer having a doping level below 10^{18} atoms/cm^3,

wherein the etch-stop layer comprises n-type dopants.

235. (Previously presented) A semiconductor structure comprising:

a layer structure including a uniform etch-stop layer,

wherein the etch-stop layer comprises p-type dopants and the doping level is below 4×10^{16} atoms/cm^3.

236.–238. (Cancelled)

239. (Currently amended) A method for forming a semiconductor structure, the method comprising:

forming a layer structure including a uniform etch-stop layer;

providing a handle wafer; and

bonding the layer structure directly to [[a]]<u>the</u> handle wafer,

wherein said uniform etch-stop layer has a relative etch rate which is less than approximately the relative etch rate of Si doped with $7x10^{19}$ boron atoms/cm^3.

240.–241. (Cancelled)